IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A method to determine the memory requirements of an application running in parallel on the system, comprising the steps of:

inputting a model and initializing a computational domain;

calculating a data density for each control element;

calculating demand cost for each sub-domain;

minimizing the difference in average demand cost;

ranking ~~the~~ processors by value; and

generating a data ownership table and frame file.

2. (Original) The method of claim 1, wherein the model is a discretized system model of a physical system.

3. (Original) The method of claim 1, wherein initializing a computational domain also comprises dividing the domain into a number of equal sized geographic sub-domains with respect to the space coordinates of the model.

4. (Original) The method of claim 3, wherein initializing a computational domain also comprises dividing the sub-domains into an integer fraction of rows and/or columns.

5. (Original) The method of claim 1 wherein data density within the sub-domains is represented by linear, area, and volume data demand functions.

6. (Original) The method of claim 1 wherein the demand cost is an area under a data density curve and is calculated by a numerical integration method.

7. (Original) The method of claim 1 wherein minimizing the difference in average demand cost also comprises adjusting the sub-domain size by "moving" bisectors.

8. (Original) The method of claim 7 wherein minimizing the difference in average demand cost also comprises recomputing data density based on a grid in each size adjusted sub-domain.

9. (Currently Amended) A system of networked computers having a plurality of processors and an operating system for executing a target parallel application process using at least a subset of said plurality of processors, wherein said system includes a method to determine the memory requirements of an application running in parallel on the system, said method comprising:

inputting a model and initializing a computational domain;

calculating a data density for each control element;

calculating demand cost for each sub-domain;

minimizing the difference in average demand cost;

ranking ~~the~~ processors by value; and

generating a data ownership table and frame file.

10. (Original) The method of claim 9, wherein the model is a discretized system model of a physical system.

11. (Original) The method of claim 9, wherein initializing a computational domain also comprises dividing the domain into a number of equal sized geographic sub-domains with respect to the space coordinates of the model.

12. (Original) The method of claim 11, wherein initializing a computational domain also comprises dividing the sub-domains into an integer fraction of rows and/or columns.

13. (Original) The method of claim 9 wherein data density within the sub-domains is represented by linear, area, and volume data demand functions.

14. (Original) The method of claim 9 wherein the demand cost is an area under a data density curve and is calculated by a numerical integration method.

15. (Original) The method of claim 9 wherein minimizing the difference in average demand cost also comprises adjusting the sub-domain size by "moving" bisectors.

16. (Original) The method of claim 15 wherein minimizing the difference in average demand cost also comprises recomputing data density based on a grid in each size adjusted sub-domain.

17. (Currently Amended) A signal-bearing medium tangibly embodying a program of

machine-readable instructions executable by a digital processing apparatus to determine the memory requirements of an application running in parallel on the system, said machine-readable instructions comprising:

inputting a model and initializing a computational domain;

calculating a data density for each control element;

calculating demand cost for each sub-domain;

minimizing the difference in average demand cost;

ranking the processors by value; and

generating a data ownership table and frame file.

18. (Original) The method of claim 17, wherein the model is a discretized system model of a physical system.

19. (Original) The method of claim 17, wherein initializing a computational domain also comprises dividing the domain into a number of equal sized geographic sub-domains with respect to the space coordinates of the model.

20. (Original) The method of claim 19, wherein initializing a computational domain also comprises dividing the sub-domains into an integer fraction of rows and/or columns.

21. (Original) The method of claim 17 wherein data density within the sub-domains is represented by linear, area, and volume data demand functions.

22. (Original) The method of claim 17 wherein the demand cost is an area under a data density curve and is calculated by a numerical integration method.

23. (Original) The method of claim 17 wherein minimizing the difference in average demand cost also comprises adjusting the sub-domain size by "moving" bisectors.

24. (Original) The method of claim 24 wherein minimizing the difference in average demand cost also comprises recomputing data density based on a grid in each size adjusted sub-domain.